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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,424	11/26/2003	Mark J. Hampden-Smith	41890-01626	6234

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EXAMINER	
VANOY, TIMOTHY C	
ART UNIT	PAPER NUMBER
1754	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,424	HAMPDEN-SMITH ET AL.	
	Examiner	Art Unit	
	Timothy C. Vanoy	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-29,33-62 and 65-98* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-29,33-62 and 65-98* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

a) The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-4, 6-29, 33-62 and 65-98 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-65 of copending Application No. 10-996,791. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of 10-723,424 and 10-996,791 disclose a method for converting a carbon-based fuel into a hydrogen-rich product gas, comprising:

(a) providing a carbon-based fuel;

(b) converting the carbon-based fuel into an intermediate gas product by contacting the carbon-based fuel with at least a first conversion catalyst;

(c) contacting said intermediate gas product with an absorbent material to absorb CO_2 and form a H_2-rich gas;

(d) extracting said H_2-rich gas from said contacting step;

(e) regenerating said absorbent, and

(f) repeating said steps (a), (b), (c), (d) and (e) at least about 10 times, wherein said absorbent material retains at least about 50 mol. % of said theoretical absorption capacity after each of said repeating steps.

The difference between the claims of 10-723,424 and the claims of 10-996,791 is that claims 44, 46 and 47 in 10-996,791 describe the temperature; gas hourly space velocity and water:carbon ratio in the same process, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is reasonably expected that the same process will inherently operate at the same claimed temperatures; gas hourly space velocity and water:carbon ratios. Please note that the courts have already determined that mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention: please see the discussion of the *In re Wiseman* 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) court decision set forth in section 2145(II) in the MPEP, 8th Ed., Rev. 3, Aug. 2005.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 29-61 and 84-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,682,838 B2 to Stevens.

Claim 1 in the Stevens patent describes a process for converting a hydrocarbon fuel into hydrogen-rich gas, comprising:

reacting the hydrocarbon fuel with steam in the presence of a reforming catalyst and a carbon dioxide fixing material to produce a first hydrogen gas;

removing carbon monoxide from the first hydrogen gas to produce the hydrogen-rich gas, and

regenerating the carbon dioxide fixing material by heating the carbon dioxide fixing material to a temperature of at least about 600 °C.

The difference between the applicants' claims and the Stevens patent is that the applicants' claims call for repeating the absorption and regeneration step at least 10 times, wherein the absorbent material retains at least about 50 mol % of the theoretical absorption capacity after each of the said regenerating steps, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is reasonably expected that the process disclosed in the Stevens patent would also undergo the same number of absorption and regeneration steps when treating the same gas with the same amount of carbon dioxide with the same absorbent in the same quantity, as a function of mass balance.

Claims 1-4, 6-29, 33-62 and 65-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application Publication US 2002/0085967 A1 to Yokota.

Claim 1 in the Yokota patent describes a process for generating hydrogen, comprising:

contacting a gas comprising fuel and steam with a reactor bed comprising a reforming catalyst and a carbon dioxide absorbent, thereby converting the gas into hydrogen and absorbing the co-generated carbon dioxide into the carbon dioxide absorbent, and

heating the reactor bed, thereby desorbing the carbon dioxide from the absorbent and regenerating the absorption capacity of the absorbent.

The difference between the applicants' claims and the Yokota application is that the applicants' claims call for repeating the absorption and regeneration step at least 10 times, wherein the absorbent material retains at least about 50 mol % of the theoretical absorption capacity after each of the said regenerating steps, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is reasonably expected that the process disclosed in the Yokota application would also undergo the same number of absorption and regeneration steps when treating the same gas with the same amount of carbon dioxide with the same absorbent in the same quantity, as a function of mass balance.

Response to Arguments

Applicants' arguments filed with the Amendment dated Dec. 11, 2006 have been fully considered but they are not persuasive.

a) *The applicants argue that there is no disclosure or suggestion by Yokota that the absorbent material utilized therein is not subject to the same limitations as the prior art materials discussed in the present application; the Lopez Ortiz et al. reference and the Lancet et al. reference.*

The argument is not persuasive because there is no suggestion that the characteristics of the alkaline earth metal oxide sorbents disclosed in parag. no. 0063 in US 2002/0085967 A1 are any different from the characteristics of what appears to be the same sorbent set forth in at least the applicants' independent claims.

b) *The applicants argue that there is no disclosure or suggestion in Stevens that the absorbent material utilized therein is not subject to the same limitations as the prior art materials discussed in the present application and also discussed in the Lopez Ortiz et al. reference and also the Lancet et al. reference.*

The argument is not persuasive because there is no suggestion that the characteristics of the alkaline earth metal oxide sorbents set forth in claim 2 in U. S. Pat. 6,682,838 B2 are any different from the characteristics of what appears to be the same sorbent set forth in at least the applicants' independent claims 29 and 84.

c) *The applicants argue that the examples of Stevens utilize a commercially available dolomite sorbent similar to the materials tested by Lopez et al. and discussed above (see col. 8 lns. 48-62).*

The sorbent materials disclosed in claim 2 in U. S. Pat. 6,682,838 B2 are not limited to the dolomite alleged to be present in the examples of U. S. Pat. 6,682,838 B2. The applicants' claims embrace the use of this same dolomite.

d) *The applicants argue that although the gas product of the Stevens patent is over 10 cycles is disclosed in Fig. 6 in Stevens, no data is provided with respect to the performance of the dolomite sorbent over 10 cycles. Thus, it is submitted that the sorbent of Stevens would be subject to the same limitations discussed above and would not be capable of the method recited in the pending claims since the sorption capacity would decrease significantly over multiple cycles.*

The process of applicants' claims 29 and 84 may include an embodiment that uses only 10 cycles for the sorbent. There is nothing in the applicants' independent claims that distinguish their sorbent from the sorbents used in either U. S. Pat. 6,682,838 B2 or US 2002/0085967 A1.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy C Vanoy
Timothy C Vanoy
Primary Examiner
Art Unit 1754

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